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# FORMAT

THE HOME OF Z80 COMPUTING



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# CONTENTS

Vol.10 N°11.

July 1997.

♦ News On 4 .....	4
♦ The Editor Speaks .....	5
♦ Short Spot .....	7
♦ The Making Of The Messenger .....	13
♦ SAM Scaling .....	17
♦ The Help Page .....	19
♦ Your Letters .....	23
♦ Format Readers Service Page .....	39

## THIS MONTHS ADVERTISERS:-

FORMAT REPAIR SERVICE	22
FRED PUBLISHING	Back Cover
INDUG MEMBERSHIP	18
S.D.SOFTWARE	2
WEST COAST MAIL ORDER	6

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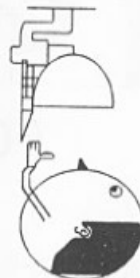
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# NEWS ON 4

## NEW SINCLAIR MICRO

Uncle (Sir) Clive Sinclair has gone back to his roots with his latest invention - the Sinclair X1 Button Radio. Weighing in at a fraction under half an ounce his new baby is a tiny VHF radio designed to be worn in one ear.

Priced at £10, which includes UK postage and packing, the X1 is only available by mail-order from Sinclair Research (Vector Services Division) 13, Denington Road, Wellingborough, Northants, NN8 2RL. There is a credit card ordering number on 01933 279300.

"It will enable you to listen to your favourite stations wherever you are, and so discreetly that even the person next to you will be unaware that you are using it," says Sir Clive. In reply to a question on where the X1's name came from, Uncle Clive replied "Just out of the air really, I'm always calling things X this or Z that, and as it is the first of a new range... Startling originality, isn't it?"

His first invention, way back in 1964, was a kit radio called the Micromatic. This started him on the road that culminated (I think we will all agree) in the early 80s with the ZX range of computers.

The X1 will, it was announced, be followed by another radio, a cordless phone, and, to get your mouth watering, a new kind of portable computer.

During questions at the press launch of the X1 Sir Clive said of the planned computer, "We've got some exciting new technology that is quite radical in design. My feeling is that portable computers at the moment are too much of a compromise, so we're looking at ways of achieving a better balance between portability and function".

As yet no date has been fixed for the launch of the computer but it could be as soon as March 1998.

## CHEAPER 'PHOTO' QUALITY COLOUR FROM CANON

Canon, the market leaders these days in ink jet printers, have announced three new colour ink jets aimed at the small office and home user.

One, the new BJC 7000, is a colour ink-jet printer that creates photo-quality paper on the fly. To print 'high quality' colour images most ink-jet printers need to use special coated paper which is expensive at up to £1 per sheet. The BJC 7000 uses a special ink cartridge which applies a clear coat to normal paper at a cost of around 15 pence per page - a far cheaper option.

The system, known as Plain Paper Optimized Printing (P-POP), in effect 'primes' the paper with a quick-drying liquid solvent that keeps the ink in place without penetrating the paper. The process also helps to set the colour dyes faster so that the ink is quicker drying, helping the quality to improve even more. The new Inks are water resistant so prints are less likely to be damaged by later handling.

The BJC 7000 will print black text without the photo-quality finish for everyday use.

Prices have not been fixed for the UK yet but it is expected to be below £400.

## YOUR NEWS HERE...

Come on readers, we need your news. Anything related to computers which you think will interest other SAM and Spectrum owners. Just jot it down on a piece of paper, add your name and membership number, and send it off to us at the usual address. Please mark the envelope 'News' so that we can give it the priority it deserves.

Remember, you get three months extra subscription for every news item we print, so don't rely on others to send in an item you have seen - send it off yourself and earn our thanks as well.

This months credits:-

## The Editor Speaks

Summer is here, the office is far too hot, the photocopier is playing up (again), the computer hates the heat and so do I, and to top it all Jenny is hinting that she wants a holiday - as if working here wasn't one long holiday....

We are having a big sort out here at the moment in a major effort to catch up. The last few months have seen us get just a little to far behind for my liking. My fault, I take the blame, but it has not been laziness I promise (well not much anyway). In truth there has been a number of things that has conspired together to get things so behind schedule, but I'm pleased to say that most of the problems are now over and we should start to catch up over the next couple of months and be back on course before winter sets in.

I have to say that what would help me along quite a bit is some more articles from readers. There have been some good ones in just recently, but I really do need lots more to help fill these pages. I know it is difficult to think of computers when the sun is shining and the wife/mother/girlfriend is nagging you to do 'summery' things, but if you could put some effort in then you will make one editor, and an awful lot of **FORMAT** readers, very happy and very grateful. I'm particularly keen for a few Christmas items *please*. While on the subject of articles, if anyone sent in an article more than a year ago, which has not yet appeared in print, I would be grateful if you could give me a ring with details.

As I told you last month, John Wase was married on Wednesday the 2nd July at his local parish church in Bishampton,

just a stones throw from 'Wase Mansion'. In the days running up to the wedding the rain had been falling with typical british-summer regularity, and we were all getting our winter woollies out ready for the big day. As it happens, the sun shone, the birds sang, the church's ginger tom kept guests amused both before and after the service, and I'm pleased to say everything went off without a hitch (well, except the couple getting hitched of course).

The rain did fall - monsoon style - but only after everyone got safely to the reception. The reception was held at the club-house of a local golf/country club and the bunkers you could see, swiftly became deep lakes as it rained so much (and still people were out playing golf).

But a great time was had by all, and I would like to use this opportunity to thank John and Lorrie for inviting Rose and myself to share their big day with them. I'm sure you will all join me in the sentiments behind the words of the famous Vulcan greeting as I say to the newly weds - "Live long and prosper".

And a real thanks to John who, having married on Wednesday, still managed to finish off a Short Spot for us before he went off on honeymoon on the Saturday.

And finally, the good news that Uncle Sir Clive Sinclair is back where he belongs (see the lead item in this month's News On 4). The news of his latest launch fills us with great anticipation for more updates on his new computer(s). Welcome back Sir Clive, your fans have missed you, you were gone far too long.

Until next month.

Bob Brenchley, Editor.

# SAM elite 512

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The original slot-in slim-line drives produced for the SAM Coupé are no longer made. If your existing drive is now showing signs of terminal decline perhaps it is time you gave your SAM a new lease of life by fitting a modern style (PC type) floppy drive.

In most cases we find the faults with old drives are mechanical (due to worn heads, stepper motor failure, etc.) In these cases you need an Internal Interface Type 1 to which you transfer the 1772 disc controller chip from your old drive - thus making the upgrade as cheap as possible.

If you need to fit a second drive (or first drive, if you don't have one or the 1772 on your old drive is faulty) then order a Type 2.

Both types are available in either kit form or ready assembled. For the kit you will need screwdriver, soldering iron, solder and a reasonable level of soldering skills. All you need for the assembled version is a screwdriver. Full fitting instructions are given and the only other thing you need is a standard PC type disc drive from your local supplier (cost about £20 to £25).

If you have any doubts about which type of interface you need, or any questions about the drive fitting in general, then please give the FORMAT hotline a ring on 0452-412572 and they will be pleased to help you.

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## INTERFACES

These interfaces work with both the SAM elite and the SAM Coupé unless otherwise stated.

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**TWOUP** Allows two interfaces to be connected to SAM's expansion port at same time. **Only £19.95**

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**ALSO AVAILABLE:** Printer Cable - £7.95, SCART Cable - £7.95, Replacement Keyboard £14.95, Replacement Power Supply - please ring. Plus spare parts service - tell us what you want and we will give you a price..

# SHORT SPOT

## YOUR HINTS, TIPS AND PROGRAMMING IDEAS

Edited By:- John Wase.

This rather abbreviated Short Spot is for July. It's a fun month for me and a fun month, therefore, for you.

So let's start. Last month I promised you a contribution from Simon Turk of Tunbridge Wells, Kent, and here it is. A little program for SAM to play with. As promised, it's a game. Well, a puzzle. Lots of puzzles!

Simon wrote that while flicking through the columns of **FORMAT**, he was struck by inspiration for a program when he saw the puzzle spot. "Wouldn't it be fun," he thought, "to get the computer to run off lots and lots of different puzzles!" The result is 'Number Puzzle'. Simon's mum is a teacher in reception at the local school, and these puzzles are ideal to improve the pupils' maths skills.

This is what you type in:-

```
10 REM NUMBER PUZZLE
20 REM SIMON TURK
30 PLOT 0,173
35 DIM a(7,7): FOR a=1 TO 7:
  FOR b=1 TO 7: LET a(a,b)=I
  NT (RND*9): NEXT b: NEXT a
36 FOR c=1 TO 7: FOR b=1 TO 7
  FOR c=1 TO 7: IF a(c,b)=0 THEN RUN = N
  EXT b: NEXT c
40 DRAW 114,0: DRAW 0,-114: D
  RAW -114,0: DRAW 0,114
50 FOR n=1 TO 6: PLOT (n*16),
  173: DRAW 0,-114: PLOT 0,1
  73-(n*16): DRAW 114,0: NEX
  T n
60 FOR n=0 TO 6: FILL 1+n*16,
  173-(n*16)-1
70 NEXT n
80 FOR n=0 TO 6: FILL 111-n*1
  6,172-n*16
90 NEXT n
```

```
100 FILL 49,172: FILL 49,172-1
  12: FILL 1,172-49: FILL 11
  3,172-49
110 GOSUB 1000
120 DIM z(20): DIM y(20): LET
  z(1)=a(1,2)*10+a(1,3): LET
  y(2)=a(1,3)*10+a(2,3): LE
  T z(3)=a(1,5)*10+a(1,6): L
  ET y(4)=a(2,1)*10+a(3,1):
  LET z(5)=a(2,3)*100+a(2,4)
  *10+a(2,5): LET y(6)=a(2,4)
  *10+a(3,4): LET y(7)=a(2,
  7)*10+a(3,7): LET z(8)=a(3
  ,1)*10+a(3,2): LET y(9)=a(
  3,2)*100+a(4,2)*10+a(5,2)
130 LET z(10)=a(3,6)*10+a(3,7)
  : LET z(11)=a(4,2)*10+a(4,
  3): LET z(12)=a(4,5)*10+a(
  4,6): LET z(13)=a(5,1)*10+
  a(5,2): LET y(14)=a(5,4)*1
  0+a(6,4): LET z(15)=a(5,6)
  *10+a(5,7): LET y(16)=a(5,
  7)*10+a(6,7): LET z(17)=a(
  6,3)*100+a(6,4)*10+a(6,5):
  LET y(18)=a(6,5)*10+a(7,5)
  ): LET z(19)=a(7,2)*10+a(7
  ,3): LET z(20)=a(7,5)*10+a
  (7,6)
133 LET y(3)=a(1,5)*10+a(2,5):
  LET y(10)=a(3,6)*100+a(4,
  6)*10+a(5,6): LET y(13)=a(
  5,1)*10+a(6,1): LET y(17)=
  a(6,3)*100+a(6,4)*10+a(6,5)
  )
134 LET scr=1
135 FOR pool=1 TO 20
140 LET rand=INT (RND*2)
145 IF z(pool)=0 THEN NEXT poo
  l
150 IF rand=0 THEN LET sim=INT
  (RND*z(pool)): LET z(pool
  )=z(pool)-sim: PRINT AT sc
  r,23;sim;" ";z(pool)
160 IF rand=1 THEN LET sim=INT
  (RND*100): LET z(pool)=z(
  pool)+sim: PRINT AT scr,23
```





```

207 IF a$="E" THEN POKE 23658,0
: STOP
210 IF a$="Z" THEN LET x=x-1
220 IF a$="M" THEN LET x=x+1
230 RETURN
300 PRINT AT b,a;" ";
310 LET a=a+v: LET b=b+w
330 IF a=31 OR a=0 THEN LET v=-
v
340 IF b=1 THEN LET w=-w
350 IF b=1=y THEN GOSUB 410
360 PRINT AT b,a;"A";
370 RETURN
410 IF a<>x AND a<>x+1 AND a<>x
+2 THEN RETURN
420 LET w=-w
430 RETURN
500 FOR i=0 TO 31
510 PRINT AT 0,i;"A";
520 NEXT i: RETURN
700 PRINT AT y,x;" ";
710 RETURN
800 FOR i=0 TO 7: READ a: POKE
USR "A"+i,a: NEXT i: RETURN
810 DATA 0,16,124,124,254,124,1
24,16

```

Multtab is described by Roy as an 'Educational-type program'. He's not revised any of the timings. Have a go!

```

1 REM G.T.Childs. Maths+Compu
ters=Fun. Sigma Technical P
ress. 1983. p49.
2 REM Revised onto ZX 81 16K
BCRB 251288.
3 REM Now onto ZX Spectrum+ 1
28K 170497.
50 CLS
60 PRINT "Lightning Multiplica
tion Tables"
80 PRINT "You will see a seri
es of 10""Multiplication
Sums appear on"
85 PRINT "the screen and you
must type in""the answers
as fast as you can."
92 PRINT "Release each key be
fore""pressing next.""
Any key to continue:"
100 LET k$=INKEY$: IF k$="" THE
N GOTO 100
120 CLS
130 PRINT "Ratings.""O
ver 60s - you will improve"

```

```

180 PRINT "Over 30s - too long
or wrong""Under 10s - go
od"
220 PRINT "Under 4s - record t
ime""Press any key to sta
rt:"
250 LET k$=INKEY$: IF k$="" THE
N GOTO 250
270 LET n=0: LET s=0
280 CLS : RANDOMIZE
300 FOR w=1 TO 10
310 LET a$="": LET b$="": LET d
$="": LET l=0: LET a=0: LET
b=0: LET c=0
320 LET a=INT (RND*9+3+1/2): LE
T b=INT (RND*9+3+1/2)
340 FOR j=0 TO 8: PRINT : NEXT
j
370 PRINT "****Attention****"
380 PRINT '
390 PRINT " ";a;" x ";b;
400 LET c=a*b
410 LET c$=STR$ c: LET l=LEN c$
430 LET a$=INKEY$
435 IF INKEY$=a$ THEN GOTO 435
440 LET n=n+1
450 IF a$="" THEN GOTO 430
460 IF l=1 THEN GOTO 540
470 LET d$=INKEY$
480 IF d$="" THEN GOTO 470
485 IF INKEY$=a$ THEN GOTO 485
490 LET a$=a$+d$
500 IF l=2 THEN GOTO 540
510 LET b$=INKEY$
520 IF b$="" THEN GOTO 510
530 LET a$=a$+b$
540 IF c$=a$ THEN GOTO 590
550 PRINT "NO* Answer is: "
;c$
560 LET n=n+60
570 PRINT "Your answer was: ";
a$
580 GOTO 610
590 PRINT "****Correct****"
600 LET s=s+1
610 FOR j=0 TO 250: NEXT j
630 CLS
640 NEXT w
650 FOR j=0 TO 9: PRINT : NEXT
j
680 PRINT "Score is: ";s;" out
of ";w-1
690 IF s=10 THEN GOTO 710
700 GOTO 730
720 PRINT "****Congratulations*

```

```

***
730 LET q=60*n/200: LET q=INT (
q*1000+.5)/1000
770 PRINT "Time was: ";q;"s"
790 FOR j=0 TO 200: NEXT j
810 PRINT "Another go? Y/N:"
820 LET y$=INKEY$
830 IF y$<>"y" AND y$<>"Y" AND
y$<>"n" AND y$<>"N" THEN GO
TO 820
840 IF y$="y" OR y$="Y" THEN GO
TO 270
860 PRINT "End of program"
870 STOP

```

Many thanks, Roy, and we'll come back to you in just a minute, as the BBC says.

Over to the SAM for just a little while. Diary. Peter Williamson's diary. Well; diary program. He writes that he was pleased that I thought his program was of interest and was included in February's **FORMAT**. Since that issue (writes Peter), he has been away visiting relations in Australia and New Zealand, and returned to find a pile of **FORMAT** magazines waiting for him.

During the post-Christmas period, Peter developed a 'search' facility for his 'Diary' program. This works, though, again, you can go and make a cup of tea and you often have time to drink it, too, before the program's produced the goods! Of course, Peter was playing with the KEYIN command - maybe there's another way of doing it. As we mentioned before, it might be an idea were it translated into SAM C. Nevertheless, Peter's listed it here for your delight and entertainment - how about looking at it to see if we can speed things up a bit for Peter, folks!

Please note that the variable T comes from the 'Calendar' program and has a value of 365!

```

2610 DEF PROC CONTENT
2620 INPUT 2 "ENTER SEARCH CLU
E ";S$
2625 PRINT "ENTER ""1"" IF ONE
ANSWER EXPECTED OR "" ""0

```

```

"" FOR MORE THAN ONE ANSWE
R"
2626 GET ANS: CLS
2630 LET AA=0
2640 FOR X=1 TO T
2650 LET A$="LET AA=INSTR(D000$
,S$)"
2660 LET A$(15 TO 17)=STR$X
2670 KEYIN "2680"+A$
2680
2690 IF AA>0 THEN GOSUB 2740
2700 NEXT X
2710 PRINT "SEARCH COMPLETE"
2720 END PROC
2730
2740 LET A$="PRINT D000$"
2745 PRINT INVERSE 1; "DAY NUMB
ER "; X
2750 LET A$(8 TO 10)=STR$ X
2760 KEYIN "2770"+A$
2770
2775 IF ANS=1 THEN LET X=T
2780 RETURN

```

And in Peter's program, this option is number 5 in the program menu. C'mon, folks; surely we can do something to make this lot go faster than the proverbial glacial snail's pace! Peter would love to see some feedback, and so would I. Who's going to rewrite it in C? Surely there must be someone out there with some ideas! Let's hear from you.

Many thanks Peter!

Finally, and possibly to Peter Williamson's rescue, here's 'Timeinstr'. Do you remember I commented that it ought to be possible to quicken the Diary search printed earlier? Well, here's one tool which might just help you. As a result of a previous letter Roy Burford wrote to our Editor, and a footnote comment he made, (V10.Nº8, p21), Roy checked out an instruction timing program he was already using on his Commodore 64, and decided to convert it to the Spectrum. Getting time out of the Spectrum is a hassle compared with the C64, but this program demonstrates the principle of taking two readings and accepting the greater (one or more of the

bytes may be on the point of changing). The program has to be tuned with line 100 as shown (matches line 40 in the first loop). In line 10, 'n' is adjusted until zero time is returned over a number of tries. n=22/23 suits Roy's ZX Spectrum+128k. The instructions to be timed are then put in line 100 and on additional lines to line 109 as required. Referring back to Ettrick Thomson's 'Kaleidoscope' program: he used PLOT, PLOT, PLOT, PLOT to locate a 4-pixel block. Roy compared this with PLOT, DRAW, DRAW, DRAW using Timeinstr, and found the latter absorbs about 8ms less time under similar conditions. This could be applied to all manner of alternative programming strategies; type it in and it's up to you!

```

1 REM Raeto West. Programming
  the Pet/CBM. Level Ltd. 19
  82. p16.
2 REM Revised in Microsoft Ba
  sic on C64 by B.C.R.Burford
  050396. Now on ZX Spectrum
  + 128K 200497.
4 GOTO 10
5 LET p$="timeinstr": SAVE d1
  ;p$: VERIFY d1;p$: SAVE d2;
  p$: VERIFY d2;p$: STOP
10 LET n=23: LET t1=0: LET t2=
  0: LET t3=0: LET t4=0
15 LET t1=PEEK 23672+256*PEEK
  23673+65536*PEEK 23674: LET
  t3=PEEK 23672+256*PEEK 236
  73+65536*PEEK 23674
20 IF t3> t1 THEN LET t1=t3
30 FOR i=1 TO n
40 :
50 NEXT i
55 LET t4=PEEK 23672+256*PEEK
  23673+65536*PEEK 23674: LET
  t3=PEEK 23672+256*PEEK 236
  73+65536*PEEK 23674
60 IF t3> t4 THEN LET t4=t3
70 LET t2=t4-t1
75 LET t1=PEEK 23672+256*PEEK
  23673+65536*PEEK 23674: LET
  t3=PEEK 23672+256*PEEK 236
  73+65536*PEEK 23674
80 IF t3> t1 THEN LET t1=t3

```

```

90 FOR i=1 TO n
100 :
110 NEXT i
115 LET t4=PEEK 23672+256*PEEK
  23673+65536*PEEK 23674: LET
  t3=PEEK 23672+256*PEEK 236
  73+65536*PEEK 23674
117 IF t3> t4 THEN LET t4=t3
120 LET t2=t4-t1-t2
130 PRINT "Time= ";1000*t2/(50*
  n); "ms"
140 STOP
1000 :
1001 REM Execute and time comman
  d(s) in L100
1002 :
1003 REM Check 0ms with L100 as
  100:
1004 :
1005 REM Vary n in L10 to get 0m
  s. n was 100 in original.
1006 :
1007 REM Several lines of code c
  an be tested without diffic
  ulty

```

Many thanks, Roy.

The usual plea - I've been desperately short of time, and I really can't waste hours trying to decipher the undecipherable. I've almost finished all the stuff I can use in a reasonable time. No more stuff; no Short Spot!

Please, therefore, keep all your snippets coming to me; without them I can't put a column together. Please send them to:-

**John Wase,**  
**Green Leys Cottage,**  
**Bishampton,**  
**Pershore,**  
**Worcs,**  
**WR10 2LX.**

See you next month.



# The Making Of The Messenger

The Evolution of a Database.

By:- Rev. Tony Kinch.

I opened my copy **FORMAT**, January 1997 edition, and turned as I always do straight to the letters page. I read Dr Gerhard Behr's letter about the need for a database for SAM together with the editor's reply. Ironically, I had on screen at the time my own database to which I was putting some finishing touches after a complete overhaul during the Christmas period.

My need for a database (although I did not know the word then) started about 35 years ago. I was secretary of a village football club at the time, and I had need to write each week to largely the same people, but with some variations caused by selection, sickness or availability.

I used to type the names and addresses of all members of the club on to rolls of address labels, using a sit-up-and-beg Imperial typewriter. The typing was done in odd moments when I had time, so that on Monday evenings, immediately after the selection meeting, I could send selection letters out. The process was very time consuming and wasteful, because there were always some labels which I could not use as well as needing some for names which had not been typed.

Some years later, I found myself looking after three churches in the Black Country. I also found exactly (and I mean exactly) the same need that I had as a football club secretary. I needed to keep in touch with a lot of people, and I needed from time to time address letters

to different groups of them. The same tools were available - a typewriter, rolls of address labels, and, now, a small duplicator.

Names and addresses were stored on a series of record cards, each made out longhand in duplicate. The white cards were stored alphabetically and the blue cards in street order. The record card itself was very good: as well as simply the name and address of the person, it allowed me to store other information I needed, like the organizations (e.g. committee member, member of Girl Guides, etc) to which the person belonged.

Any communication with the people took a long time. Cards had to be sorted manually and address labels typed in the same way as before - usually by burning the midnight oil immediately before a mailing was due!

I was not able to improve on this system for almost 20 years. When I moved to Telford, the problem became more acute because I was dealing with more people in more organizations over a wider area. We looked at all sorts of complex ways of overcoming the problem, including a vastly complex system of machinery which required an individual stencil to be cut for each name and address with the typewriter. Each stencil was inserted into the machine one at a time and the stencil transferred to an envelope by pressing a handle. It was messy, and I cannot in all honesty



say that it saved much time over the typing of address labels in a continuous roll.

The only marginal improvement was in the photocopyable address label. These came in sheets with about 18 labels per sheet, and by keeping master sheets already typed out it became possible to produce address labels much more quickly. Three problems, however, remained. All searches still had to be done manually from the record cards, with the risk of overlooking someone. Alterations had to be done manually, either by tippexing out a name and address to be altered, or by re-typing the whole master sheet. It was also very wasteful, because many labels were needed frequently, whilst others much more rarely.

As you can imagine, the master sheets became very messy and their accuracy was always suspect. Although they were useful for regular mailings, they never really superseded the typewriter and roll of address labels.

*Then came the ZX81.*

I had moved by this time to a large town centre Church in Wolverhampton and had the additional responsibility for a group of 8 churches and four other ministers. The need was even greater.

I experimented with the ZX81. A very simple database was created containing the following:-

Name, title and initials (A\$)  
Address 1 (B\$)  
Address 2 (C\$)  
Address 3 (D\$)  
Postcode (E\$)  
Telephone No. (F\$)

Each array was 20 bytes long.

In addition, each record was capable of holding up to 6 codes of up to three

letters each (G\$,H\$,I\$,J\$,K\$,L\$) to hold in the form of simple codes the committee/organization information which was on the record cards. A ZX81 with 16K memory pack would hold, with program, about 50 such records.

A simple program was written to allow the data to be entered and corrected. Further routines on the program allowed for the recall of the information in the form of record cards on screen, with searches on the second line of the address (the area of town), and for any one code.

There was no limit to the number of codes HCL could be used (although each record was limited to 6), but no code register was incorporated within the program because of memory limitations. A code register, indicating what each code stood for, had to be kept as a separate manual document.

Initially, all the program did was to search and produce screen lists for the required data-recall option. It did, however, deal with two of the problems previously encountered: it was accurate in its searches and so no-one was left out, and it was much easier to keep up to date. Labels still had to be produced manually as before, and it was not possible to store information alphabetically. When one file of 50 names was full, a second one had to be created, and so on.

It was slow in loading, and slow in its searches. *IT WAS, HOWEVER, ALREADY VERY MUCH FASTER THAN ANYTHING WE HAD USED BEFORE.*

With the addition of the 32K Memotech rampack it became possible to create files of 200 names and addresses each. These were quite satisfactory for our requirements at the time.

The next addition was the Sinclair ZX printer which produced address labels of a sort, which then had to be stuck on the envelopes using 'Pritt sticks' or some other glue. For over two years all our mailings went out with silver coloured paper address labels on the front.

We never bought the rubber-keyed Spectrum because we did not consider that the keyboard represented an improvement on the ZX81. So it was not until the arrival of the Spectrum+ that we were able to make the next advance. The program was translated from ZX81 Basic to Spectrum Basic, initially using the good old tape recorder as the data storage medium. More modern dot matrix printers allowed normal computer address labels to be used, and the newer printers made it possible to produce address lists as well.

When the microdrive started to establish itself as a reliable medium - yes! we did find it reliable! - we were able to make further improvements. In order to separate data from program, and also to make alphabetic listing possible, the strings A\$ to K\$ were amalgamated into one string (A\$) of 138 bytes length. The length of 138 bytes was simply the addition of the previous arrays. At the same time the 20 byte array for postcode was reduced to 8 bytes, with the remaining 12 bytes used as a greeting for a very crude mail-merge program that I wrote at the same time. Mail-merge with dot matrix printers is not really satisfactory, and the program was never developed.

Data could now be inserted manually into an alphabetical sequence, and the deletion of unwanted records was considerably speeded up. All data was still inserted using capital letters, ZX81 fashion; in fact it was not until the final

amendments were done during December 1996 that this was altered.

The program remained in this form throughout the remainder of the Spectrum period. Indeed, after it was transferred to SAM in the early 1990's, the only alterations to the program were that the extra memory available was used to increase the maximum number of records per file to 500, and separate files for the codes were created so that a code register could be incorporated within the program and each code was given a full description of up to 35 characters long. The method of inserting data was also improved.

From about the beginning of 1996 it became obvious that the program needed fully updating. Manual insertion into alphabetical listing was satisfactory with files of 100 records or thereabouts, but with longer files it became very time consuming. The introduction of MasterBasic last Spring made alphabetic sorts quick and easy, and so, during the autumn of last year I decided to fully update the program.

It was also seen that an extra field was required as a possible description following the name and address, and at the same time a further field should be introduced for the county which was necessary for some addresses. The data entry for the name was improved so that the surname could be stored alphabetically, preceded by title and first name or initials, or the whole name could be stored alphabetically, which was useful for storing company names.

Both list and label printing were improved. In label printing, the option was given on data input for the description to be printed or ignored. The label routine was altered so that it only prints lines with data in them and does



not leave blank lines in the middle of a label. Some new searches were added so that the program is more flexible than before.

This had been completed by the middle of December last, when, suddenly I was advised that a colleague in a nearby town had been taken seriously ill, and that emergency measures needed to be put into place. I found that I needed to write the same letter to a lot of different people, and that they needed to be individually addressed, rather than a photocopied standard letter. So the mail-merge issue which I had looked at some years before and never pursued became an important matter once again (and a viable option with the ink jet printers).

*The Secretary* does have a mail-merge routine. I had never used it because it required making separate mail-merge and text files. I decided to look at it again and see if it could be made compatible with the data I already held on my database.

Surprisingly, it only took one night's worth of midnight oil to make it possible. I designed it so that a *The Secretary* "T\_\*" file was written with two markers '&1' where the name and address was to start and '&2' or '&3' (depending upon whether or not the greeting "Dear xxxx" was to be used) at the start of the common text.

*The Messenger* loads *The Secretary* text file and splits it in two. All text below the '&2' or '&3' marker is turned into one file ("T\_mergtxt"). The text above the '&1' marker is joined to each of the names and addresses required in turn, and a second text file ("T\_merg1") is created. The file will hold up to 120 names and addresses with the name/ address starting at line 16 (the right place for use

with standard window envelopes). If more names and addresses which can be held in one file are required, *The Messenger* creates further files ("T\_merge2" etc.) until all required names and addresses have been used.

The file "T\_merg1" (and "T\_merge2" etc if required) is loaded into *The Secretary* and the page length set to the length of file (normally 25 lines if the name and address starts at line 16). The text file "T\_mergtxt" is loaded into the 'mail-merge' page of *The Secretary*. On printing, the 'Print Rage' option is used for the number of names and addresses in the "T\_merg1" etc. file.

I was astonished how well, and how quickly, it worked.

The only question that remains is "Can a database written entirely in Basic be effective?" To this I make three comments:-

- Basic allows me to keep the database up to date with my requirements, as demonstrated by the surprise need for a mail-merge routine last December. A program written in machine code, or even compiled 'C' would be much more difficult to make modifications to.
- Although there is a lot of program, the individual routines are quite short, and in consequence fast. In fact *The Messenger* runs faster than some machine code databases I have used which have to pick up each individual data file from floppy or hard disc. The routine which I use most is the one for printing address labels. The searches are performed faster than the printer can print them out, and consequently the fact that the program is in Basic is, at this point, immaterial.
- I have been using this database, as it

Please turn to page 22.

# We Are SCALING

By:- Ettrick Thomson.

SAM's scaling variables, xos, xrg, yos, yrg (or XOS, XRG, ...) are dealt with in Chapter 6 of the SAM User's Guide. There is, by the way, a misprint: near the bottom of page 77, it has 'LET XOS=-18...XOS=-16.'; it should be YOS not XOS. This article goes into more detail and discusses certain subtleties.

The program below is used for illustration. Lines 40-70 draw a figure that lies within a circle of radius 1 centred at the origin: Line 20 puts this figure comfortably within the upper screen area. The figure is RECORDED and BLITZed, with Lines 100,130 setting scaling variables. The effect of scaling variables depends on the MODE and the height of the lower screen; the switch-on values, MODE 4, height 18 pixels, will be assumed unless stated otherwise.

```

10 CLS #
20 LET xos=1.8,xrg=3.6,yos=1.
  22,yrg=2.7
30 RECORD TO a$
40 PLOT 1,0
50 FOR t=0.2 TO 63.1 STEP 0.2
60 DRAW TO COS t*COS (1.1*t),
  SIN t
70 NEXT t
80 RECORD STOP
90 PAUSE 100: CLS
100 LET xos=0,xrg=256,yos=0,yr
  g=192
110 PEN 5: BLITZ a$
120 PAUSE 100: CLS
130 LET xos=-1,xrg=512,yos=173
  ,yrg=384
140 PEN 2: BLITZ a$

```

Consider first xos, the x-offset, and xrg, the x-range. Let xp be an x-value as

specified by the program, and xs the x-coordinate of the resulting screen pixel, which must have one of the values 0,1,2,...,254,255. Then:-

$$xs = [(xp+xos)*256/xrg] \quad (1)$$

where [x] means x rounded to the nearest integer. The switch-on values of xos,xrg are 0,256: with these values xs=[xp]. The minimum value of xp is that which makes xs=0, i.e. -xos. The maximum value, since xs must not exceed 255, comes from:-

$$(xp+xos)*256/xrg < 255.5$$

$$\text{i.e. } xp < (255.5/256)*xrg - xos \quad (2)$$

For preliminary calculations, xp < xrg - xos may be used. But if xp approaches this upper limit, you may have to be more precise. In the program, the minimum and maximum values as determined by Line 20, are -1.8 and, approximately, +1.8: xp lies between -1 and +1, so the figure is reasonably in the middle of the screen.

Now for yos, the y-offset, and yrg, the y-range. This is bedevilled by the screen division into the lower (editing) area and the upper area. The screen pixels, ys, take the value 0,1,2,... 190,191. On switch-on, the lower screen height, H, is 18. The relation between yp and ys is:-

$$ys = [(yp+yos)*192/yrg+H] \quad (3)$$

The switch-on values for yos, yrg, H are 0, 192, 18 so:-

$$ys = [yp+18]$$

The normal range of yp is 0 to 173 giving ys from 18 to 191, i.e. the upper screen.

The minimum value of yp is -yos; its maximum value is obtained from the relation:-

$(yp+yos)*192/yrq + H < 191.5$   
so:  $yp < (191.5-H)*yrq/192-yos$

Unlike the x values it is not true that the upper limit of yp is approximately  $yrq-yos$ . But  $0.9*yrq-yos$  may be used.

In the program, the minimum and maximum values of yp, as determined by Line 20, are -1.22 and, approximately, +1.22, compared with actual minimum and maximum values of -1 and +1. The range values  $xrg=3.6$ ,  $yrq=2.7$ , have a 4:3 ratio, as have the pixels 256:192, so that the circle looks like a circle.

The value of yp can be negative, as long as ys is not negative, with switch-on values, yp can be as low as -18. Such negative values mean plotting on the lower screen, thus using the whole screen for plotting. This works, but there is a slight snag: the concluding message of success 'OK ...' is printed on the lower screen, obliterating anything your program has put there. A final PAUSE will allow the whole screen to be examined.

Line 110 of the program redraws the figure that Line 40-70 created, but in a different colour and faster. But you must have Line 100: why? What is RECORDED is not the values xp,yp of the program but the values xs,ys (actually 191-ys) that the scaling process produces; with these as input, the switch-on values of Line 100 are needed. Lines 130,140 reproduce the figure at half scale in the top left quarter of the screen. For Line 130, half scale means double range, which determines xrg,yrg; xos and yos

use eqns (1),(3), with known values. If xp is 0 then so is xs;  $xp=255$  means  $xs=127$ ;  $yp=-18$  (lowest pixel) must give  $ys=96$ , lowest pixel in top half;  $yp=173$  must give  $ys=191$ . Two values are checked because of the uncertainties caused by rounding.

Finally, some odds and ends.

The scaling for MODE 2 is like that for MODE 4.

MODE 3, when first switched on, has 512 pixels in the x-direction, so the values 512 and 511.5 replace 256 and 255.5 in equations (1) and (2) above. But if you obey the command  $FATPIX=1$ , you are back to 256, 255.5.

In MODE 1, H is 16, which cannot be varied. In other modes, the command  $CSIZE$  width,height will make  $H=2*height$ .

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# The HELP PAGE

Edited By:- Ray Bray.

Greetings to all **FORMAT** readers, I'm glad that at last we have enough material to put together another Help Page - a rare occurrence over recent months. I can't really believe you are all busy computing with your Spectrums and SAMs and *not* having any problems, so come one, get writing.

To start with we have two +3 queries. The first comes from A.J.Harding of Hucclecote, Gloucester who wishes to know whether an Epson LX100 printer will work with the +3, and what the pin connections are. The answer to the first part of the query is that the LX100 will work with the +3 but before it can be used the following POKES have to be made:-

POKE 23354,62

POKE 23355,16

and sometimes

POKE 23399,20

If TASWORD +3 is being used then these POKES are executed by the installation program.

On the question of the pin connections for the LX100, we do not have access to a manual for this printer so are unable to give you any advice other than to contact Epson (UK) Ltd. However, I would expect the parallel printer connector to be wired to the CENTRONICS standard, just about every one is these days, in which case a standard +3 printer lead will work. Perhaps one of our readers is, or has been, using one of these printers with the +3 and can confirm this answer.

The second letter concerning the +3 came from J.Woodhead of Hebden

Bridge, Yorkshire. He has two main queries, the first concerning the use of a Mitsumi disc drive he bought to use as a 'B' drive on his +3 with DISCIPLE. He says that although it has been very successful with double density discs, it will not format high density discs.

From the wording of the letter it is not clear whether your problem is that it is not possible to perform a High Density format on a HD disc, or, that it will not perform a 720K format on a HD disc? If it is the former then, although the Mitsumi is a 1.4Mb drive, unless you have a found a special program, the DISCIPLE does not give the option to format to 1.4Mb. Alternatively, if you cannot format a HD disc to DD standard then it might be possible that the drive is sensing that it is dealing with a HD disc and is not receiving the correct signal from the DOS to tell it to ignore this fact. In which case you could try covering the HD hole with a piece of sellotape to see if this fools the drive into believing it is dealing with a DD disc. Another thought is that if you are trying to reformat 'freebee' discs from magazines then most of these have the write-protect slide removed, in which case you have to put tape over this hole as well.

Mr Woodhead's second query is that he has purchased a Tatung 14" TV with the intention of using it as a RGB monitor. The dealer told him that it has a 'standard' SCART socket and it certainly has an RGB channel. Mr Woodhead also drew our attention to previous issues which showed an RGB connection to



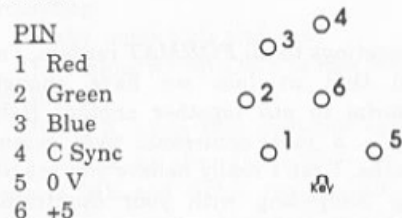
SCART where pin No 1 of the RGB was connected to pin 20 of the SCART. He was concerned about connecting 12 volts to pin 20. He also pointed out that in one issue we showed pins 16 and 20 of the SCART linked and, in another issue, pins 16 and 21 were linked.

On the query about the TV connections, firstly thank you for pointing out the typing error in the December 95 issue. The correct link on the SCART socket should be between pins 16 and 20. The reference to connecting pin 1 of the RGB output to pin 20 of SCART applies only to the Spectrum +2 as that particular machine has a composite PAL signal on pin 1 not the 12V which Alan Sugar thought fit to provide on subsequent models of the Spectrum. You say that the Tatung TV has an RGB channel but I wonder if it has an RGB socket, if so it is probably better to use that instead of the SCART socket. The following diagram shows the connections required to a standard SCART socket. Check the pin numbers in your TV manual as some manufacturers do not always stick to the standard layout.

RGB Pins	SCART Pins
2 Gnd -----	14 CS Gnd
4 Comp Sync -----	16 C Sync <..
6 Green -----	11 Green :
7 Red -----	15 Red :
8 Blue -----	7 Blue :
Shield -----	21 Earth :
	20 CVID In <..

A further question on RGB connections came from Peter Deane who has recently obtained a CUB Monitor and wishes to know the details of the pin connections for leads to connect to either the SAM or the Spectrum+2 computers. The first thing I would say is that if the SAM is connected to the CUB the SAM red green

and blue TTL (transistor to transistor logic) outputs have to be used rather than the linear outputs, therefore the display will be restricted to eight colours which will limit the graphic performance of your SAM. The CUB pin-out is as follows:-



The pin connection to the Spectrum +2 computers will be:-

Spectrum	CUB
7 -----	1
6 -----	2
8 -----	3
4 -----	4
2 -----	5

The pin connections to the SAM will be:-

SAM	CUB
8 -----	1
10 -----	2
6 -----	3
16 -----	4
14 -----	5
21 -----	Screen

Staying with the subject of TVs/monitors, Grahame Parkyn wrote from Truro in connection with the problem that Doug Casterton was having with his SAM connected to a Nokia TV (April 97). Grahame says that he has a similar set up and suffered from interference on the screen when either disc drive was running, although the picture was excellent when the drive motors stopped. He found that the interference could be entirely avoided by using the TV in the TEXT mode. So if Doug's TV has Teletext then this is a

simple answer to his problem. Thank you for that tip Grahame.

Peter Deane had a further query concerning transferring his files from PLUS D and Opus discs to SAM because these two pieces of equipment are becoming unreliable. He states that he is slowly trying to convert some of them to SAM with the aid of SPECMAKER but he would like to know if there is a program available to read the discs (presumably on SAM?), and obtain a printout to keep for reference. Also is there such a thing as Tasword 2 that can run on SAM and is there any way to convert Tasword 2 files to run on OUTWRITE?

I don't know of a SAM program which will print out all PLUS D and Opus files directly but, in the case of programs which you can load via SPECMAKER, these can be LLISTED to the printer in the normal way. In the case of Tasword text files you would have to load Tasword and the files to SAM using SPECMAKER and then print out the text via Tasword. However, there is a Tasword 2 program for SAM and as far as I remember it will read PLUS D Tasword +2 files, unfortunately I don't know whether it is still available - perhaps one of our readers can advise? Alternatively, because Spectrum code files can be loaded directly to SAM, it is a simple matter to print Tasword files as text using the short program below.

```

10 CLEAR 59999: MODE 3: CSIZE
   8,8
20 CLS : INPUT "Enter filename
   e:- ";N$
30 INPUT "Enter file length:-
   ";L$
40 LOAD N$ CODE 60000
50 PRINT MEM$(60000 TO (59999
   +VAL L$))
60 STOP

```

And finally, a question from Peter

Williamson of Sleaford. He purchased a reconditioned SAM with a single new PC type drive fitted. He has been trying to install the working slim-line drive from his old machine into the number 2 drive slot on the new machine. However, when he tried to use it by typing the command DEVICE D2 he gets the error message 'No such drive'. He asks if the old type drives are incompatible with the new circuitry or is there some other problem.

Well, according to Bob, who I understand designed the new circuitry, there should not be a problem. If, as in most cases, your main drive is fitted on the left hand side everything should work. He tells me that there are a few reconditioned Coupés with the drive fitted on the right, as in the Elite. In this case there could be a wire missing on the underside of the main board, if this was left off then drive two would never work.

The other problem could be your DOS. If you are using SAMDOS, and have it saved to many of the discs you use, it may have been set up for a single drive machine. MasterDOS auto-detects (most times anyway) how many drives you have fitted. SAMDOS only detects this when you boot up the original system disc with all the demo programs on. If you are using SAMDOS then boot with your original system disc again and resave SAMDOS over any existing copies you have.

If you still have a problem after trying these ideas then give Bob a ring on the hot-line and he may be able to come up with a fix.

That's all we have for this month.

Now, as I said at the beginning, there are not many requests for help coming in these days. Why? I don't know, it is very strange. Still, this means that those questions we do get are now waiting rather long for their reply and I suppose this then puts others off writing. So, to

help things along what we are going to do from now on is this. If we are unable to print a regular Help Page each month we are willing to answer your queries by post providing you enclose a stamped addressed envelope. All the questions and answers handled in this way will be combined and published in a later Help Page. That way you get an answer as quick as possible, and hopefully we will get more material through to form a Help Page just a little more regularly than during the last year.

Keep sending your problems/answers to the following addresses:-

**Anything SAM or General Purpose:-**

Ray Bray (*FORMAT* Help Page),  
Spring Cottage, Bourne Close,  
Porton, Salisbury, Wilts, SP4 0LL.

**Anything +3, CPM:-**

Mike Atkins (*FORMAT* Help Page),  
70, Rudgwick Drive,  
Bury, Lancashire, BL8 1YE.

Please remember that if you want any discs/printouts etc returned then you must include an SAE, and you must also include an SAE if you need an answer in advance of the next Help Page.



Continued from page 16.

has developed, for the best part of ten years, and at no time have I considered it necessary to look around for a commercial, machine code database.

**Editor's Note:** Tony did a wonderful job demonstrating his latest version of *The Messenger*, and the development that led up to it, at the Gloucester Show in April (for which I thank him very much - it was a very interesting display he put on).

If there is sufficient interest from SAM owners then a commercial version with a full manual will be available later this year. But please, we need to know what interest there is, and if you don't write to us we will not know you are interested will we?

## FORMAT

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# YOUR LETTERS

**Dear Editor,**

I am sending this letter, asking if and when the SAM Clock Board will be forthcoming, as I have already paid for this item previously.

I am also enquiring about the cost required in buying back issues of your excellent *FORMAT* magazine's, from Vol.2 to Vol.9 N° 9.

Is there any SAM hardware/software that you sell apart from those listed in the club magazine. And, if not, from where can I possibly find the game called 'Defenders of the Earth', and the other older items for the SAM/Elite Computers.

I have enclosed a list of software/magazine/club users that I know about. Can you give me an update on these and their very latest software/hardware/magazine/disc/club membership details, as I am very much in the dark about whether they are still operating.

Thanks to you and your members of *FORMAT* Publications for still standing by the SAM Coupe/Elite brigade of users.

*Yours sincerely, Mr C.Roads.*

SAM Clock, while terribly delayed, is nearing ready for shipping.

The prices for back issues are shown on the Reader Service page at the back of this issue. Volume 4 and above are advertised because we have good stocks of them. Vol.2 & 3 are not advertised because we only have small stocks left, however, Jenny has but one of each aside for you if you want to send in an order (prices the same a Vol.4). She will hold them for a few weeks for you.

D.o.E. is usually available on one of the

stands at a Gloucester show.

And the latest Spectrum & SAM Resource Directory is being worked on. You should have issue one of the directory as part of the Vol.10 N°1 (Sept'96) issue of *FORMAT*, while there are some companies that are not listed, there are not many. **Ed.**

**Dear Editor,**

Looking through the members list of HPCC, the users club for Hewlett Packard hand held and portable computers, I came across 'West Coast Ltd' Attn: Stuart Hastings, HEWCALC, 20, Boulton Road, Reading, UK

Is this the same West Coast?

*Yours sincerely, Alan D.Cox.*

No! **Ed.**

**Dear Editor,**

PC's are not the only ones to suffer with a date problem in the Year 2000. Has anyone thought that SAM's own word-processor *The Secretary* will have the same problem, because the date entered is in the form 'DDMMYY'?

I would also like to know if the new SAM Clock will suffer from the problem.

Is anyone you know of, working on a software answer to *The Secretary's* date problem, maybe an upgraded program or an upgrade to be merged with *The Secretary*, then re saved.

Just to change the subject, does anyone know how to shorten SAM's 'Screen Save' time, that is the time while not pressing any key's before the TV goes blank.

It is a good job *FORMAT* does not



suffer from a date problem. I would not want to miss a copy.

*Yours sincerely, John Murphy.*

There will be a fix for *The Secretary*, plus a couple of pokes for MasterDOS to get round its insistence that the year 2000 does not exist. We will publish them sometime soon.

The system variable that controls the screen-blanking is at 23088 (SOFE) but all this does is disable screen blanking if it is poked with a non-zero value. Personally, I always thought this logic was the wrong way round and you should have needed to poke something to enable screen-blanking, not disable it. By the way, screen blanking only works in modes 3 and 4.

There is another system variable at 23236 (SOFFCT) that is used as a counter by the ROM. But it is reset every time a key is pressed and it counts down. This means there is no real way you could use it unless you monitored its contents in your program and reset it to a suitable value yourself. The counter gets decremented approximately every 5.15 seconds and in normal uses gets reset to zero (256) every time a key is pressed. I hope this helps you. *Ed.*

**Dear Editor,**

With regard to your statement in the June Letters Page of *FORMAT*, I would like to correct you on your comment:

"If Prism (and Alchemist Research) were serious in their support of the Spectrum then why have they never come to Gloucester"

The reasons that I have never come to Gloucester is as follows:

1. Too many people have said that the show is SAM biased. If this is the case, then there will be more SAM customers. Why should a Spectrum group go to a show with little Spectrum support or visitors. Alchemist Research does provide a SAM version of AlchNews, but that is sold by F9 and Persona Software,

both of which I believe attend your shows.

2. Without copies of AlchNews being posted, there is a profit margin of 30p. To cover transport and stand costs, I would have to sell around 200 copies of AlchNews to break even. Even if you did have 200 Spectrum users attend, most of them are probably subscribers of AlchNews anyway.

3. If the past two NSS shows are anything to go by, people have said how they enjoy them more, and I find that most of my readers actually live in the north of England and find it easier to travel to Wetherby than to Gloucester.

4. Alchemist Software are based in Bristol, they are far more likely to attend the shows on my behalf.

So, I end in clarifying that Alchemist Research ARE serious about their work to the Spectrum. Our magazine is probably the largest around for the Spectrum. No other groups cover the Spectrum and other emulators as we do, and Bill Richardson of EEC has asked Alchemist Research to re-start a Z88 user group. We already have a large range of software and articles to keep AlchNews going well into the next century. And, our email is regularly used by users throughout the world wanting help and advice for their Spectrum. I do not believe that any other Spectrum groups do this.

*Yours sincerely, Andy Davis,  
Alchemist Research.*

All I can say to that is "What a load of rubbish".

First and foremost, the Gloucester shows are Spectrum and SAM. Not one, nor the other, but both. I would say over the years that the Spectrum/SAM divide, while changing from show to show, has been fairly even.

As to your second point, the way you look at your costs and profits is of course down to you, but the Gloucester shows

are the biggest and most well attended, so the question you should ask yourself is "Can I afford to miss them?"

True, Alchemist Software only come from Bristol, but that would only save them a little petrol money. And I'm sure if people can travel from Germany and The Netherlands to get to Gloucester it shows that they are worth coming to. I'm also sorry to say that the NSS show is now irrelevant as, sadly, Allen Clarkson has announced that there is unlikely to be any more.

I could go on more, but I will stop there. Once again readers, sorry to have used so much space on this. *Ed.*

**Dear Editor,**

I draw your attention to the third paragraph, second column of page eight, in *FORMAT PC* Vol.1 N°6 June '97.

I suggest that, if you really want to, you could contact Mr Karl Feilder, and tell him that I would not expect any computer, or any diary for that matter, to show the year 2000 as a leap year. IT IS NOT. Fancy printing that in your normally useful magazine.

We are all taught from being quite young the usual rhyme:-

30 days hath September, April, June and November. All the others have 31, excepting February alone, which has 28 days, except in a leap year.

So, how do you calculate leap years?

I thought it was quite simple. You divide the year number by 4. i.e.  $2000 \div 4 = \text{leap year}$ , because there is no remainder, it is exactly divisible by 4, therefore a leap year.

Not so, that is only part of the answer, isn't it?

Print the correct calculation in *FORMAT* or *FORMAT PC*. You could make it a programming problem, with a prize of free months subscription for the best programme, I leave the judging to you.

PS. In actual fact the precise

calculation of some of these simple 'sums' are quite difficult, like how to define the date of Easter, but this programming problem should not be too hard for most people with a little knowledge of Basic. Perhaps 3 months subs as a prize.

*Yours sincerely, Malcolm Jones.*

Mmmm. Now how do I put this. Sorry Malcolm but you, like so many others, have fallen into the trap. The year 2000 is most definitely a leap year.

The rule actually, goes like this:-

A year is a leap year if it is a multiple of 4. Except when the year is also a multiple of 100. However, if the year is a multiple of 400 it is a leap year (over-riding the 100 rule). There is also another couple of layers to the rule but I can't remember them (anyone help?).

Now it is that last bit that causes problems, 1900 was not a leap year (nor was 1800 or 1700) but 2000 is. If programmers had stuck to the first rule (multiple of 4) then there would be no problem, the computers would be correct until the year 2100. But some programmers thought they were clever and added the 100 year rule, but not the 400 year rule - as a result they have problems in the year 2000 rather than in 2100AD. *Ed.*

**Dear Editor,**

Firstly, I would like to say thanks for the article you wrote about the computer calendar problem. This has clarified (for my father and myself) the problem that, has/had not, been publicised.

Unfortunately, it has still left one problem:- According to a Book of Knowledge under the section entitled Calendar, the account that we have read, states that every fourth year on the current calendar will be a leap year, (you're probably saying everybody knows that, maybe they do), and every 400 years another day should be added.

The year 2000 is a natural leap year, but is also divisible by 400, therefore we

as members of the human race should be looking at this problem as well. Will all the computer programs have to be changed again to compensate for the additional day required in the year 2000?

I hope the above has not bamboozled you, but has given you (and others should you print it), something else to think about.

Thanks for listening and I will look forward to your reply.

*Yours sincerely, A.Laws.*

As MPs say "I refer the gentleman to the answer I gave some moments ago".

I don't think there is any year in which you add an 'extra' leap-day (Feb 30th?) but I may be wrong. If I remember correctly the rules (only part of which was given in the previous answer) keep the years correct until sometime around the year 32000AD, which, considering the time when the calculations were made, is nothing short of breath-taking. **Ed.**

**Dear Editor,**

I've been a Spectrum user for many years but have now purchased a second-hand Dell 486DX4/100 computer. Some time ago I remember you doing a review of a Spectrum emulator for the PC. Is it still available and if so where can I get it from.

Sorry, but I cannot consult my **FORMATs** as they are still boxed up ready for an impending move of house.

Please keep up the very good work you and your team do. **FORMAT** is a wonderful source of information and I would hate to have to do without it. My Spectrum will, by the way, still be set up and used as soon as I've moved into the new house and have more room.

*Your sincerely, Martin Yates.*

Well Martin, thanks for your kind comments. The emulator you refer to is the Z80 Emulator which is still available from Brian Gaff at B.G.Services. The full

version, including DISCiPLE emulation costs just £20. The shareware version has been on several cover discs and is available from most PD/Shareware distributors. For the full version write to Brian at 64 Roebuck Road, Chessington, Surrey KT9 1JX. Tel: 0181 287 4180.

There are of course several other Spectrum emulators and, if I can find someone willing, we will try to get some comparative reviews done sometime soon. **Ed.**

**Dear Editor,**

I know it has been said before, but I would like to say it again. Once again You have astounded me with the speed with which you come up with answers to problems that I phone the technical hot line about.

Last week I phoned you, quite late in the evening. I expected to leave a message on your answerphone and ring back during the following day for an answer. But no, there you were, still working. Then, to cap it all, not only did you answer my problem with my SAM (yes the disc drive heads did benefit from the cleaning) but you also gave me some very good pointers on using the Ami-Pro word-processor at work.

I really think the hot-line service you run is worth the subscription to INDUG on its own. Congratulations on a very good service.

*Yours sincerely, Dave Richardson.*

Wow, thanks Dave, will have to get the office door widened now so I can get my head through. Seriously though, I can't always help - but I do try. **Ed.**

Letters may be shortened or edited to fit on these pages although we try to edit as little as possible.

This is YOUR letters page so it is up to you to fill it with interesting things. Come on, get writing, any subject even remotely related to computers. Just keep things as short as you can so we can fit in as many as possible each month. Please write clearly or type your letters. Send them to the address on page 3 or Email them to us at [Formatpub@aol.com](mailto:Formatpub@aol.com).

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# FORMAT

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